REMARKS/ARGUMENTS

Claims 1, 24, and 25 are amended herein. Claims 33-46 are withdrawn from consideration. Claims 1-4 and 7-32 are currently pending.

Claims 1 and 13 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication No. 2007/0053300 (Zhu et al.) in view of U.S. Patent Application Publication No. 2004/0006640 (Inderieden et al.) and U.S. Patent No. 6,665,273 (Goguen et al.).

Claim 1 is directed to a method of determining traffic paths between one or more source-destination node pairs in a communications network. The method includes starting from a first set of paths between the source-destination node pairs, determining a second set of paths between the source-destination node pairs while taking into account a set of constraints, such that the second set of paths emulates the first set of paths. The first set of paths is related to the use of a first routing protocol and the second set of paths is determined for use with a second routing protocol, different from the first routing protocol. Claim 1 has been amended to clarify that each path extends from a network interface at a source node to a destination node (see, for example Fig. 2).

Zhu et al. disclose multi-path shortest-path-first computations and distance-based interface selection for VoIP traffic. A cost is assigned to each of a plurality of internal segments between a multi-path router instance and the network interfaces associated with the multi-path router instance. An aggregate cost is calculated for each of a plurality of traffic paths originating at the multi-path router instance in the source IP device and extending through each of the network interfaces associated with the multi-path router instance to a destination IP device in the network. A list of IP paths is generated, and the paths in the list are ranked based on the calculated cost. The path costs and rankings are updated in response to segment cost changes.

In rejecting the claims, the Examiner refers to paths A and B as a first set of paths and C and G as a second set of paths. However, path G is not a traffic path between the same source-destination node pair as paths A and B. As described at paragraph [0059] of Zhu et al., SPF instance sets costs for interior segments (350, 352, and 354) so that the paths A, B, and C appear to have the same aggregate costs. As shown by the network segment cost table of Fig. 3, these paths each have different costs (e.g., path A (segment 316 + segment 326) = 73, path C (segment 320 + segment 330) = 67). In contrast to the claimed invention, Zhu et al. modify internal calculations within the network device. The interior workings of the IP device are not paths between source-destination node pairs. The internal segments of Zhu et al. is an internal value assigned between a router instance and the network interface of the IP device. Thus, there is no second set of paths between source-destination node pairs that emulate a first set of paths between said source-destination node pairs.

As noted by the Examiner, Zhu et al. do not disclose wherein a first set of paths is related to the use of a first routing protocol and the second set of paths is determined for use with a second routing protocol, different from the first routing protocol.

Inderieden et al. describe notification to routing protocols of changes to routing information base. Rather than starting from a first set of paths related to the use of a first routing protocol and determining a second set of paths determined for use with a second routing protocol, Inderieden et al. simply point out that a routing information base may include a plurality of routes provided by different routing protocols. There is no determination of a second route from a first route. Instead, the routing information base includes a plurality of independent routes.

Goguen et al. disclose dynamically adjusting MPLS traffic engineering tunnel bandwidth. In Goguen et al., when constraint-based routing is used, an operator only specifies the amount of traffic that is expected to flow in a TE tunnel and the MPLS TE system then calculates the paths based on constraints suitable for carrying the load and establishes explicit paths. These paths are established by considering resource

requirements and resource availability, instead of simply using shortest path, as is done in Zhu et al. Goguen et al. therefore teach away from using shortest path as done in Zhu et al.

Furthermore, Goguen et al. use MPLS protocols. In rejecting the claims, the Examiner refers to the Background of the Invention at columns 1 and 2 of Goguen et al., which describes how IGP may be used to build a routing table. With regard to constraint-based routing, the Background describes how an MPLS TE system is used to calculate paths based on constraints. The cited references thus fail to teach determining a second set of paths between source and destination node pairs such that the second set emulates the first set of paths and the first set of paths is related to the use of a first routing protocol and the second set of paths is determined for use with a second routing protocol, as set forth in the claims.

Accordingly, claim 1 is submitted as patentable over the Zhu et al., Inderieden et al., and Goguen et al.

Claims 2-4, 7-23, 26-32, depending either directly or indirectly from claim 1, are submitted as patentable for at least the same reasons as claim 1.

Claim 2 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Zhu et al., Inderieden et al., Goguen et al. and U.S. Patent No. 7,233,574 (Worfolk et al.). Worfolk et al. describe how a source node allocates traffic load and notes that traffic may be allocated such that the traffic load between paths is equal or dependent on the path metrics of the paths. There is no teaching of determining a second set of paths from a first set of paths such that traffic load on the second set of paths emulates a traffic load on the first set of paths. Instead, Worfolk et al. take existing paths and allocate traffic among the existing paths.

Regarding claims 3 and 4, the Examiner refers to Goguen et al. and cites col. 1, line 62 which describes a routing module that constructs a routing table using

conventional routing protocols. Goguen et al. do not show or suggest a first set of paths included in a load model for source-destination node pairs.

Claim 7 is further submitted as patentable over the cited references which do not show or suggest a second set of paths determined such that the routing using a second routing protocol is similar to the routing using a first routing protocol. In rejecting the claims, the Examiner refers to a routing module that constructs a routing table and lists conventional routing protocols that may be used. There is no teaching of determining a second set of paths wherein the routing is similar to a first set of paths.

Regarding claim 8, as previously discussed, Goguen et al. do not determine a second set of paths starting from a first set of paths. Thus, there is no teaching of a set of constraints related to a second set of paths. The constraints discussed in Goguen et al. are used in setting up primary TE tunnels.

Claim 9 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Zhu et al., Inderieden et al., Goguen et al. and U.S. Patent No. 6,650,620 (Neogi). Neogi is directed to resource constrained routing in active networks. There is no disclosure of constraints used to determine a second set of paths from a first set of paths and related to the second set of paths.

Claim 15 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Zhu et al., Inderieden et al., Goguen et al. and U.S. Patent Application Publication No. 2001/0012298 (Harshavadhana). Claim 15 requires that constraints comprise a maximum number of paths between source-destination node pairs. In contrast, Harshavadhana et al. describe how a pre-specified parameter is used to limit the maximum number of paths which can be stored in memory for each source-destination ring pair. Thus, Harshavadhana teaches away from using a maximum number of paths for constraints.

Claim 16 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Zhu et al., Inderieden et al., Goguen et al. and U.S. Patent Application Publication No.

20070286201 (Prager et al.). Prager et al. note at paragraph [0022] that a bandwidth load balance value may be expressed as a ratio of a numerator and a denominator. The Examiner has failed to paint to any teaching of constraints that comprise that the traffic between a particular source-destination node pair is load-balanced such that the share of traffic along any paths is a fraction with constrained integer numerator and denominator.

Claims 17-20 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Zhu et al., Inderieden et al., Goguen et al., and U.S. Patent No. 5,519,836 (Gawlick et al.). Gawlick et al. describe a method of on-line permanent virtual circuit routing. In rejecting the claims, the Examiner refers to refinement of a routing selection so that the total cost of routing all of the virtual circuits is reduced. Gawlick et al. use a greedy heuristic in which each possible alternative path for each virtual circuit is examined to see which alternative path, if any, reduces the cost of routing by the greatest amount. In contrast to Gawlick et al., claims 17-20 describe search techniques used to determine a second set of paths from a first set of paths. Gawlick et al. use a heuristic to compare selected alternative paths. The claimed invention uses search techniques to determine a second set of paths from a first set of paths. Furthermore, Gawlick et al. do not teach using a generate and test search algorithm or an optimal search algorithm.

Claims 22 and 23 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Zhu et al., Inderieden et al., Goguen et al., U.S. Patent Application Publication Nos. 20040202111 (Beshai) and 2005/0018693 (Dull). Dull discloses a fast filtering processor. The Examiner refers to paragraph [0039] which describes how equal cost paths are chosen in a random manner. The Examiner has failed to point to any teaching of wherein ties between symmetric solutions are broken randomly.

Claims 24 and 25 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Zhu et al. in view of Inderieden et al., Goguen et al. and Worfolk et al. Claims 24 and 25, as amended, are submitted as patentable for at least the reasons discussed above with respect to claim 1. As previously discussed, the cited references do not show or suggest a first set of paths related to the use of a first routing protocol and a second set of

paths determined for use with a second routing protocol. Worfolk et al. do not overcome the deficiencies of the primary references.

Claim 26 is further submitted as patentable over U.S. Patent Application Publication No. 2007/0124488 (Baum et al.), which does not show or suggest switching from an interior gateway protocol to a multi-protocol label-switching traffic engineering protocol. In rejecting the claim, the Examiner refers to Fig. 5 of Baum et al., which shows migration to other types of physical transport and switching/routing protocols (Ethernet, Frame Relay, etc.).

Claim 28, depending from claim 26, is submitted as patentable for at least the same reasons as claim 26.

The other references cited, including U.S. Patent No. 7,130,262 (Cortez) and U.S. Patent Application Publication Nos. 2006/0039364 (Wright), 2001/0012298, 2004/0202111 (Beshai), and 2004/0052207 (Charny), do not overcome the deficiencies of the primary references.

For the foregoing reasons, Applicants believe that all of the pending claims are in condition for allowance and should be passed to issue. If the Examiner feels that a telephone conference would in any way expedite the prosecution of the application, please do not hesitate to call the undersigned at (408) 399-5608.

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